

Vascular Access: Achille's Heel of Hemodialysis

Damanhour Annual Meeting 2013

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Barriers to Optimal Vascular Access

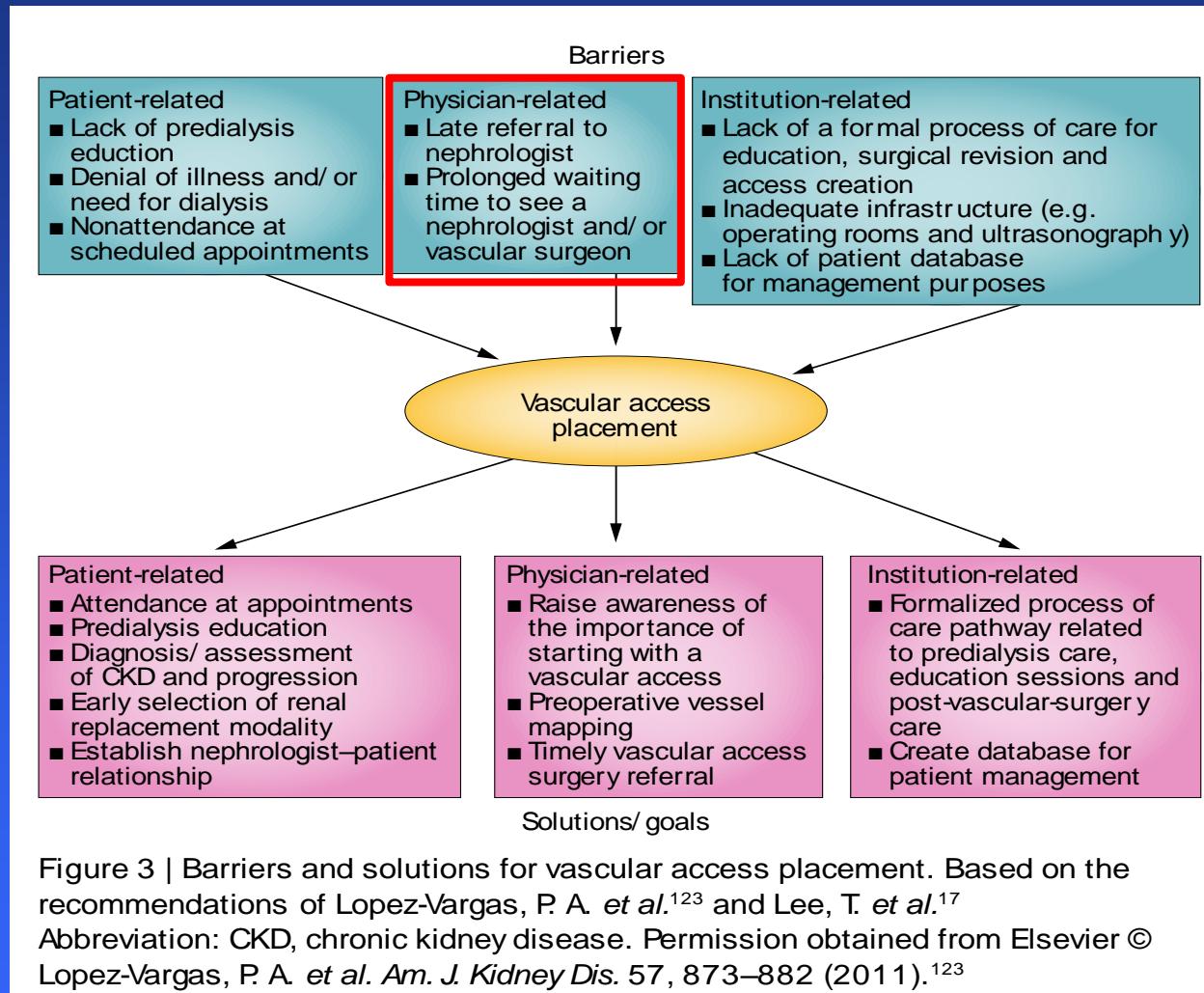


Figure 3 | Barriers and solutions for vascular access placement. Based on the recommendations of Lopez-Vargas, P. A. *et al.*¹²³ and Lee, T. *et al.*¹⁷

Abbreviation: CKD, chronic kidney disease. Permission obtained from Elsevier © Lopez-Vargas, P. A. *et al.* *Am. J. Kidney Dis.* 57, 873–882 (2011).¹²³

CKD in Emerging Countries:

The Real Problem

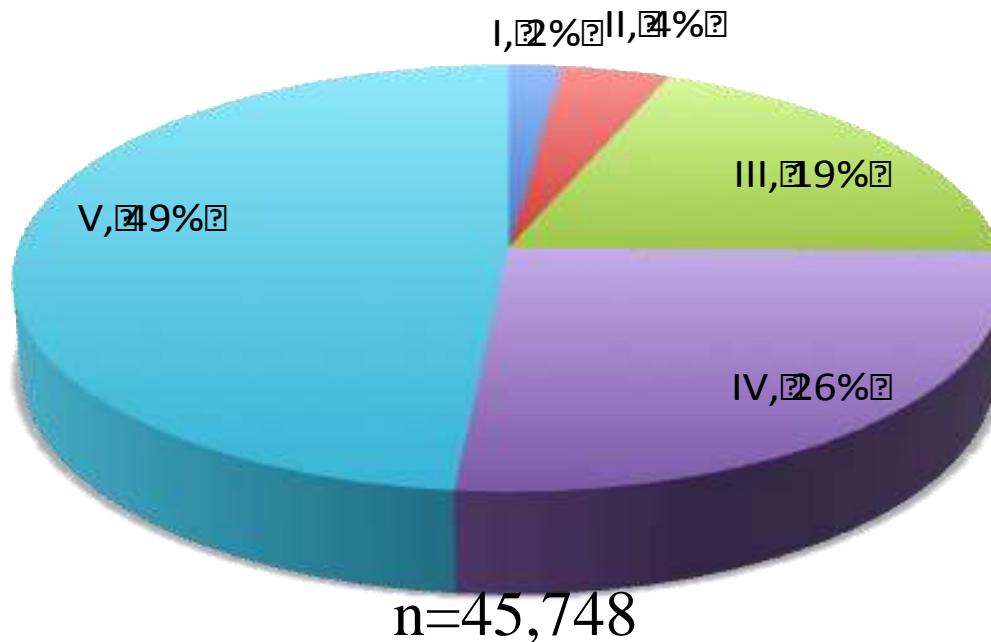
Not the EARLY DETECTION of CKD1-2

BUT

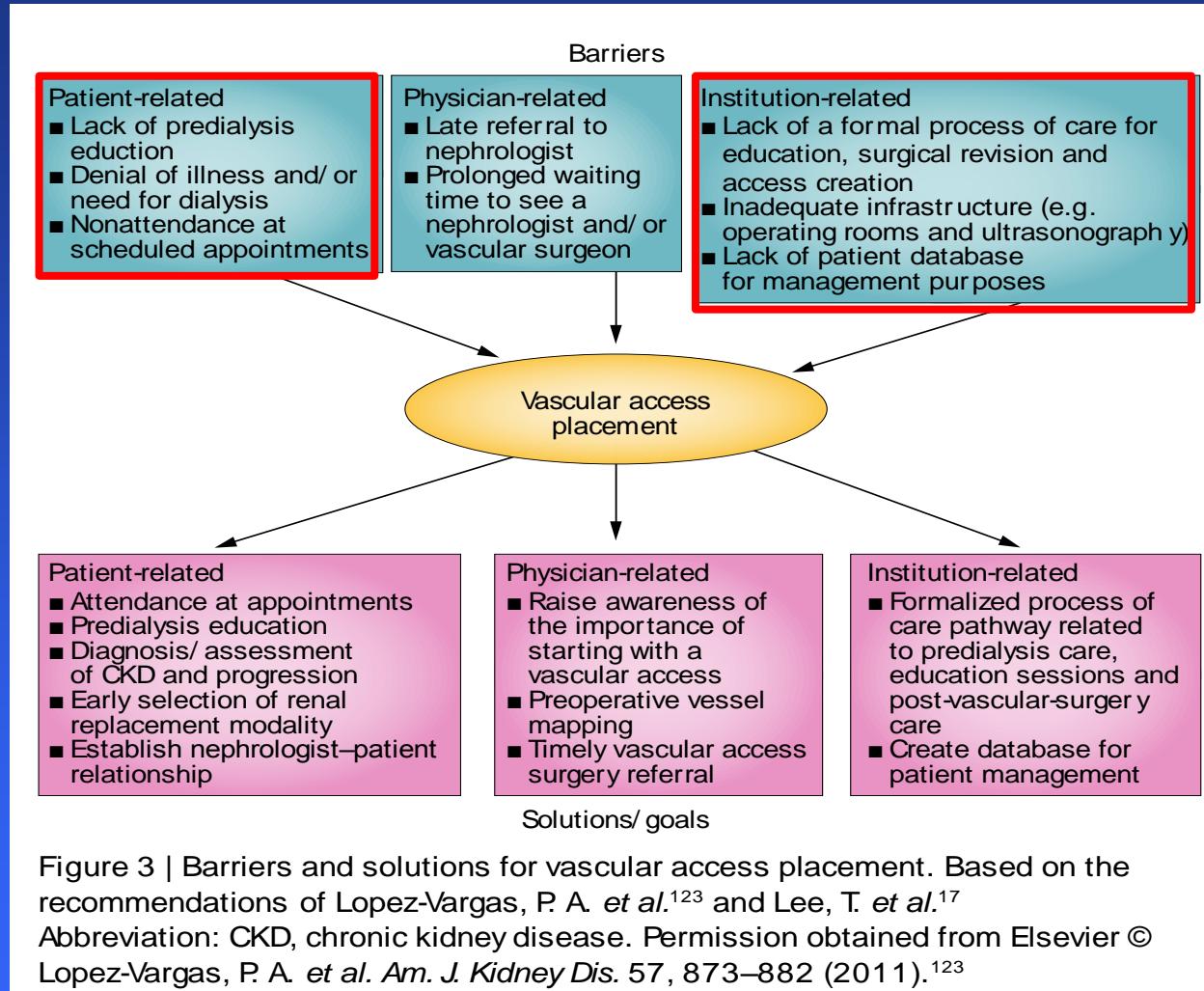
The EARLY REFERRAL of CKD3

CKD stages at presentation

Indian CKD Registry



Barriers to Optimal Vascular Access



Pre-Dialysis Clinics/Consultation

Multi-Disciplinary Approach to ESRD

Nephrologist

Surgeon

Nurse Specialist

Radiographer

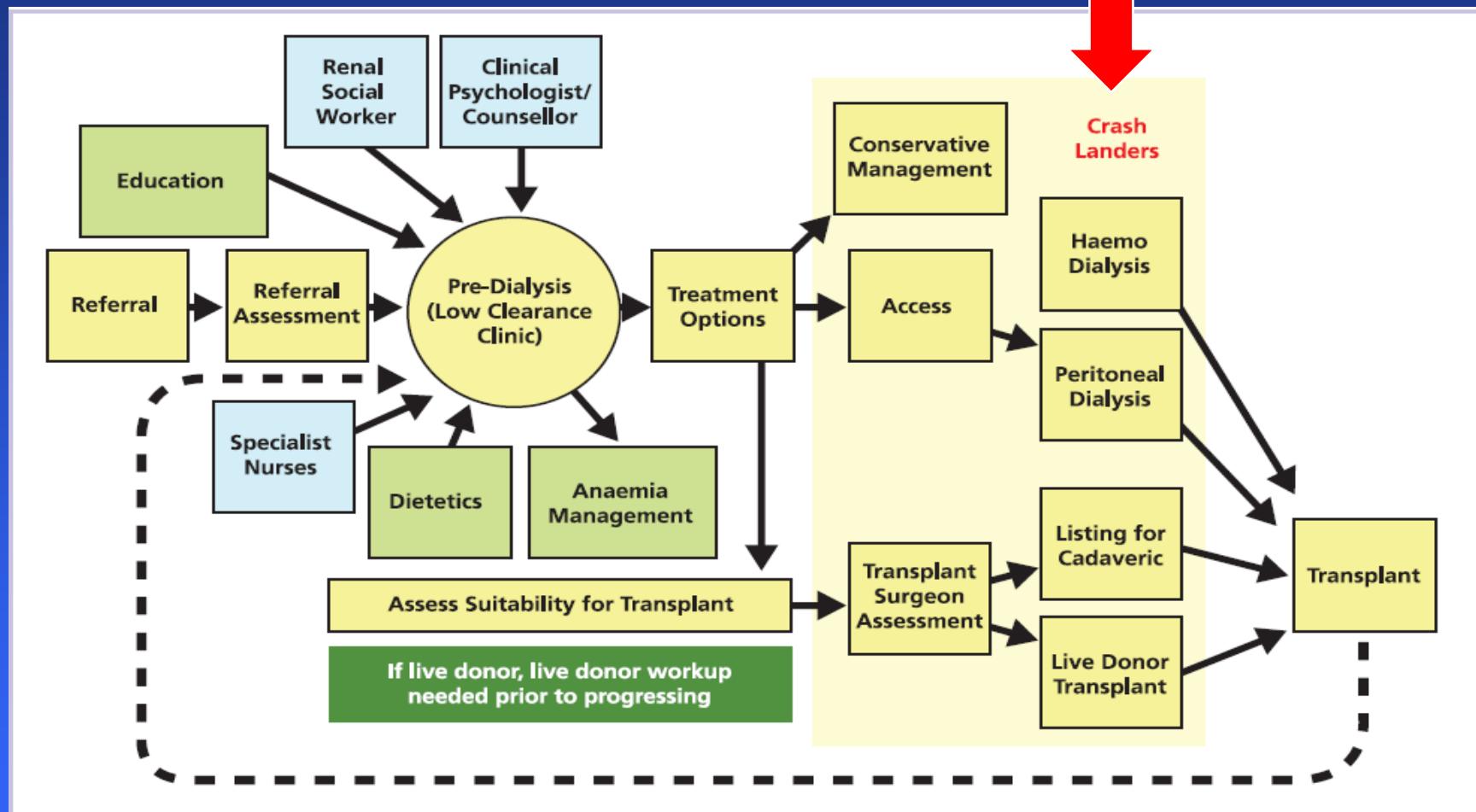
Nurse Counsellor

Transplantation Counsellor

Dietitian

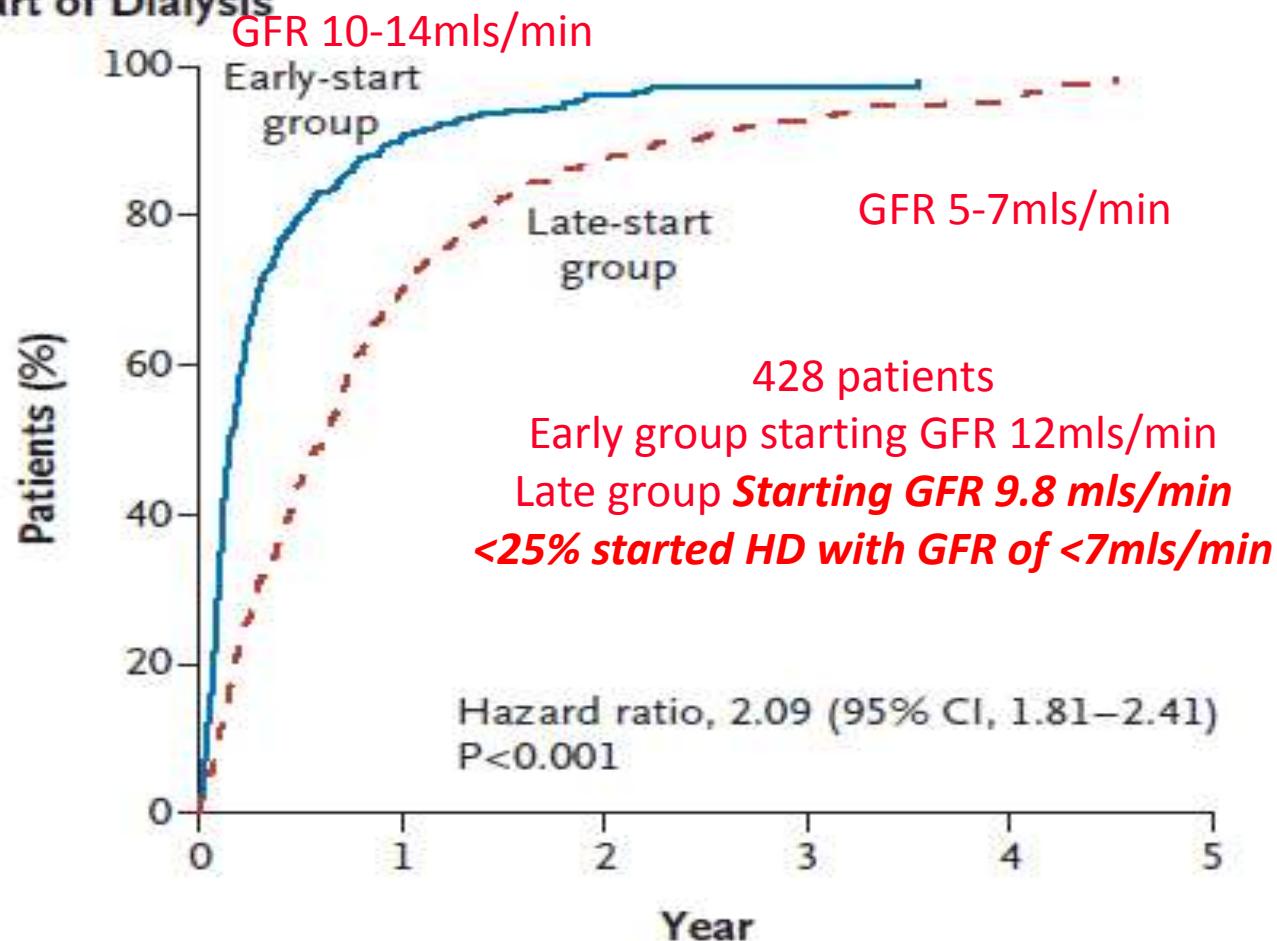


Pre-RRT Pathway



Early vs Late Start dialysis – IDEAL study

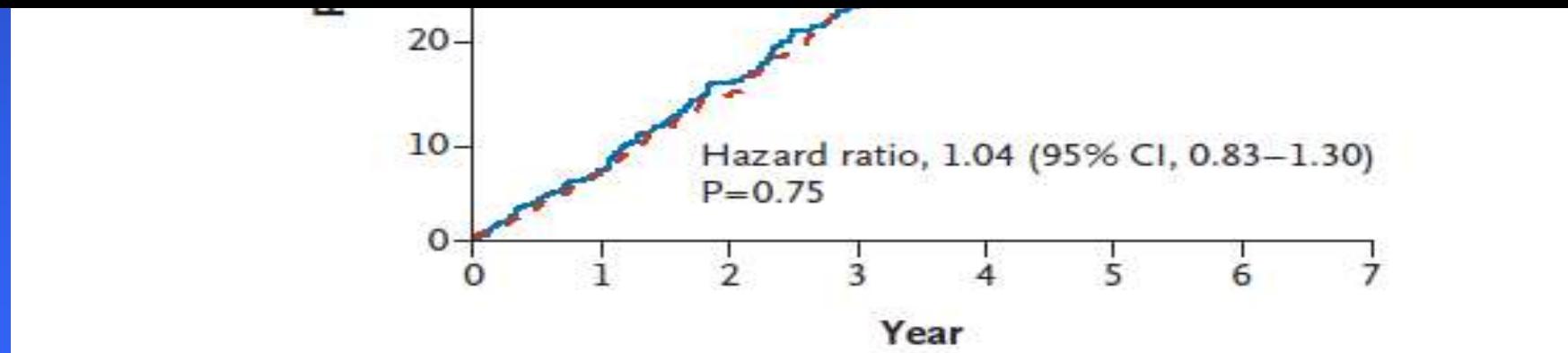
A Time to Start of Dialysis



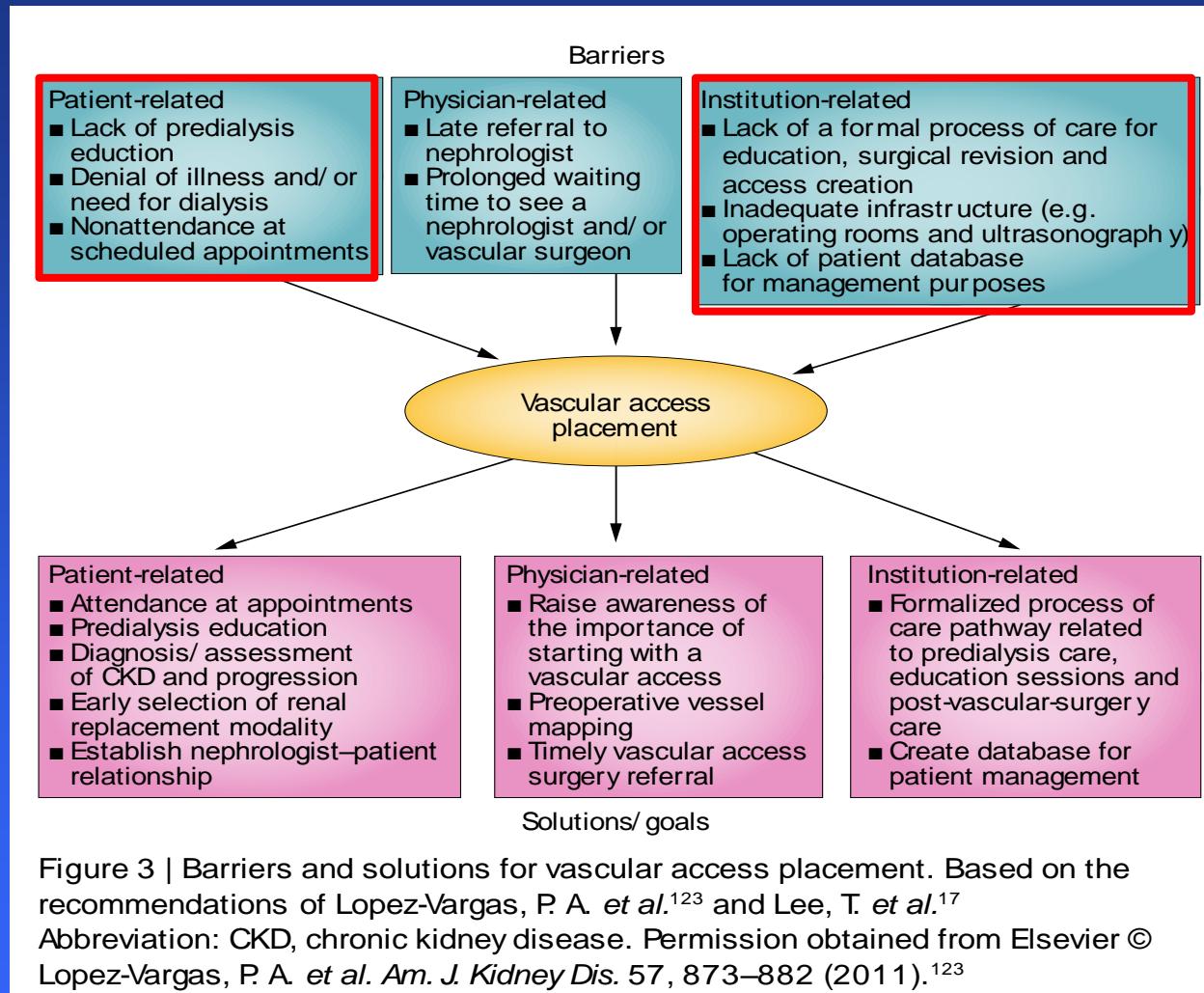
Early vs Late Start dialysis – IDEAL study



This study emphasises the need for good predialysis care not late starting!! Most people will develop symptoms when GFR between 8-10



Barriers to Optimal Vascular Access



FFI

Fistula First Initiative: Advantages and Pitfalls

Charmaine E. Lok

Department of Medicine, Division of Nephrology, Toronto General Hospital, Toronto, Ontario, Canada

Clin J Am Soc Nephrol 2: 1043-1053, 2007. doi: 10.2215/CJN.01080307

GOALS
Incident AVF:.....
Prevalent AVF:.....



Fistula First Initiative: Advantages and Pitfalls

Charmaine E. Lok

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K/DOQI GOALS

Incident AVF: 50%

Prevalent AVF: 40%



Fistula First Initiative: Advantages and Pitfalls

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Department of Medicine, Division of Nephrology, Toronto General Hospital, Toronto, Ontario, Canada

Clin J Am Soc Nephrol 2: 1043-1053, 2007. doi: 10.2215/CJN.01080307

2009 Revised GOALS

Incident AVF: 50%

Prevalent AVF: 65%

CVC: <10% !!!



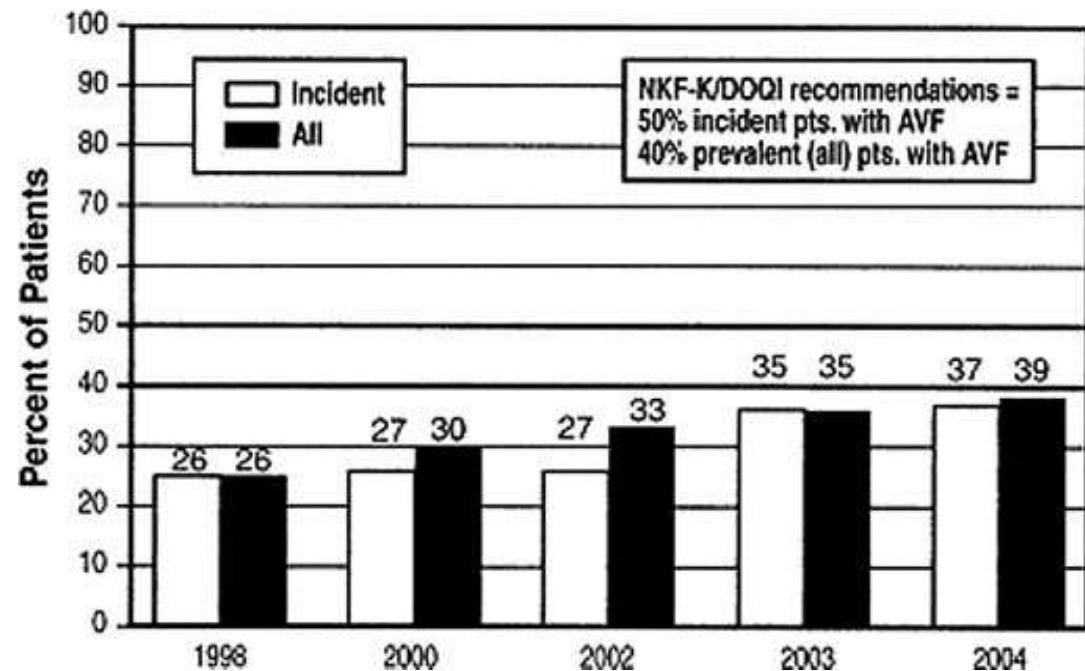
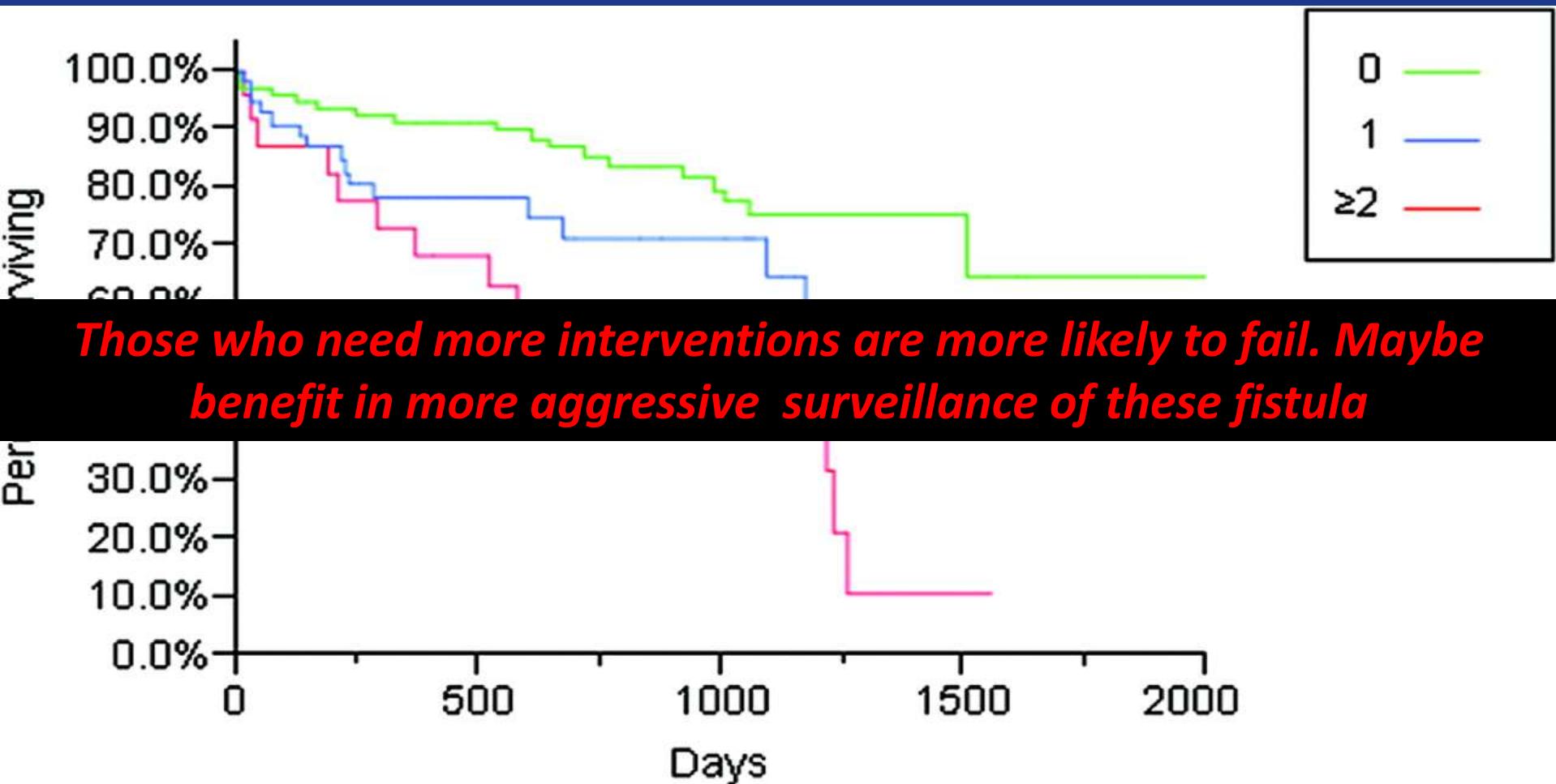


Figure 2. Percentage of adult in-center hemodialysis (HD) patients (all and incident) who underwent dialysis with an arteriovenous fistula (AVF) as their vascular access on their last HD session during October through December 2004 compared with previous study periods. 2005 ESRD CPM Project. Reprinted from reference (15), with permission.

However, creating fistulas may not be the critical challenge. The true challenge is achieving 65% *functioning* fistulas in today's dialysis patient. Several decades ago, AVF had acceptable primary failure rates of approximately 10% (16–19) and 1-yr primary patency rates between 70 and 80%. Now, primary failure rates range between 30 and 70% and have primary patency rates of 40 to 70% (20–24). Primary failure is due to early thrombosis and failure of the fistula to mature (FTM). The

Cumulative access survival by number of interventions before manipulation



Too Many CVC

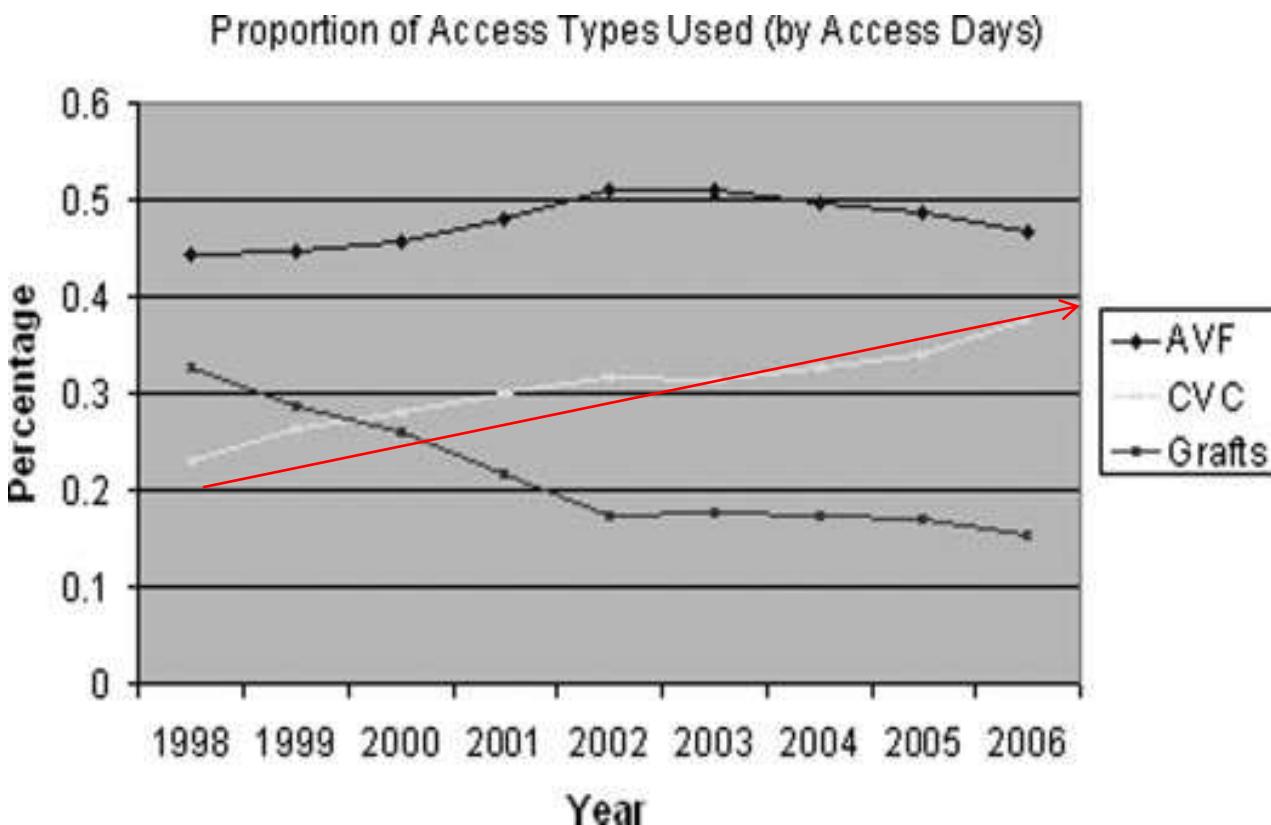
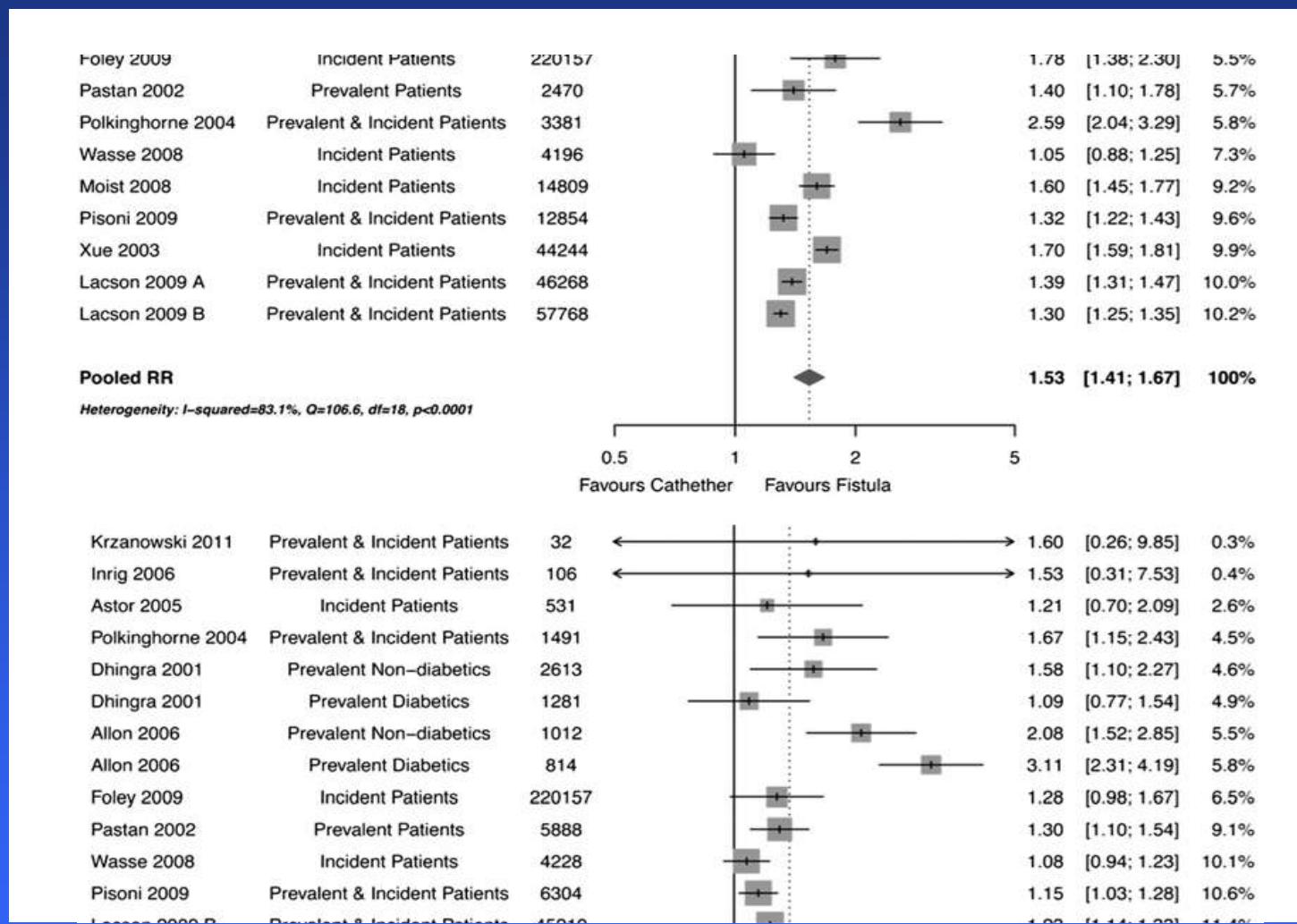


Figure 4. Trend in access use in a university-based hospital.

Associations between Hemodialysis Access Type and Clinical Outcomes: A Systematic Review

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Brenda R. Hemmelgarn,^{*†‡} Jonathan C. Craig,^{††††§§} Braden Manns,^{*†‡} Marcello Tonelli,^{**}
Giovanni F.M. Strippoli,^{††§§¶¶¶¶} and Matthew T. James^{*†‡}

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Fistula First!

Fistula First!

1. Timed AVF
2. Quality of AVF
3. Needling
4. Medication

Box 3. Suggestions to Address Patient Resistance to AV Fistulas

- Start discussing AV fistulas with patients with CKD stages 4-5 before dialysis therapy is initiated
- Educate patients about the infection risk and other practical issues associated with catheter use
- Identify and treat anxiety and depression in affected patients
- Use topical anesthetic to reduce the pain associated with cannulation
- Use relaxation or distraction techniques to reduce anxiety during cannulation
- Teach patients to self-cannulate
- Consider using the buttonhole technique for cannulation

Abbreviations: AV, arteriovenous; CKD, chronic kidney disease.

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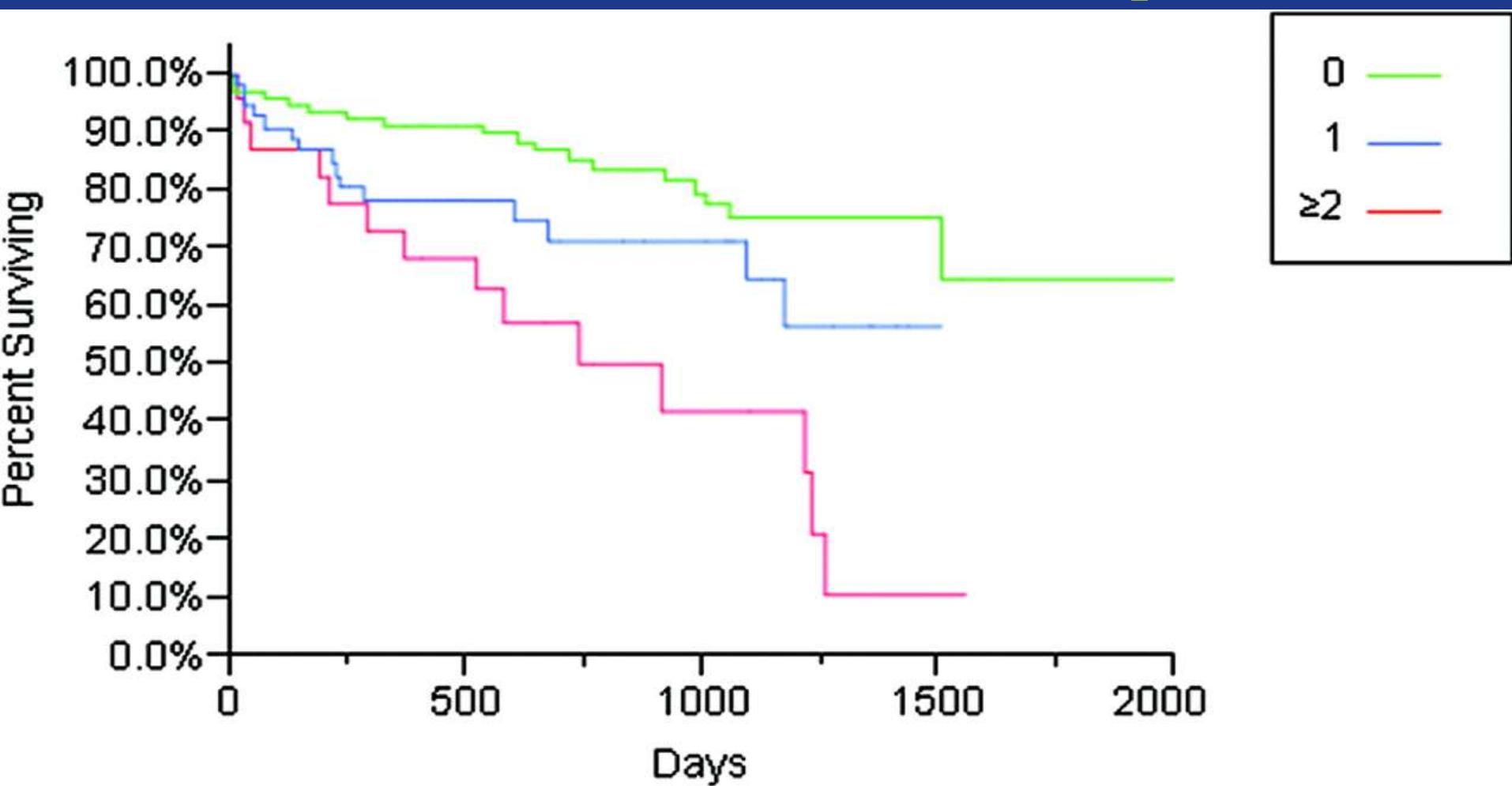
Fistula First!

1. Timed AVF
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Fistula First!

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Cumulative access survival: Number of interventions before manipulation



Fistula First!

1. Timed AVF
2. Quality of AVF
3. Needling of AVF
4. Medication

Button Hole v Rope Ladder

OBJECTIVES: Compare buttonhole cannulation with rope ladder

RESULTS:

- Infection at the cannulation site occurred in four patients in the buttonhole group and one in the rope ladder rotation group ($p = 0.11$).
- Haematomas at the cannulation site and site pain experienced during the dialysis session were more often recorded for the buttonhole group ($p < 0.05$).

CONCLUSIONS:

- This study showed that ***buttonhole cannulation resulted more infections, haematoma formation and site pain during dialysis than with the rope ladder rotation group.*** A further larger scale longitudinal study is recommended.



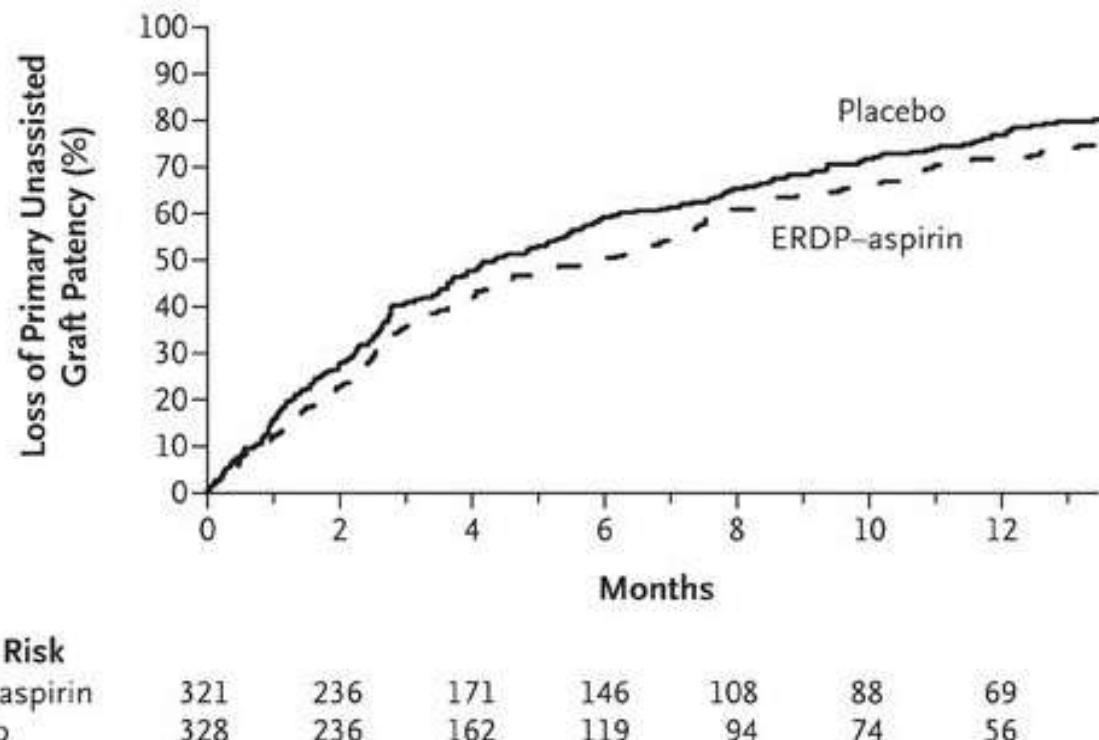
Chow J et al 2011



Fistula First!

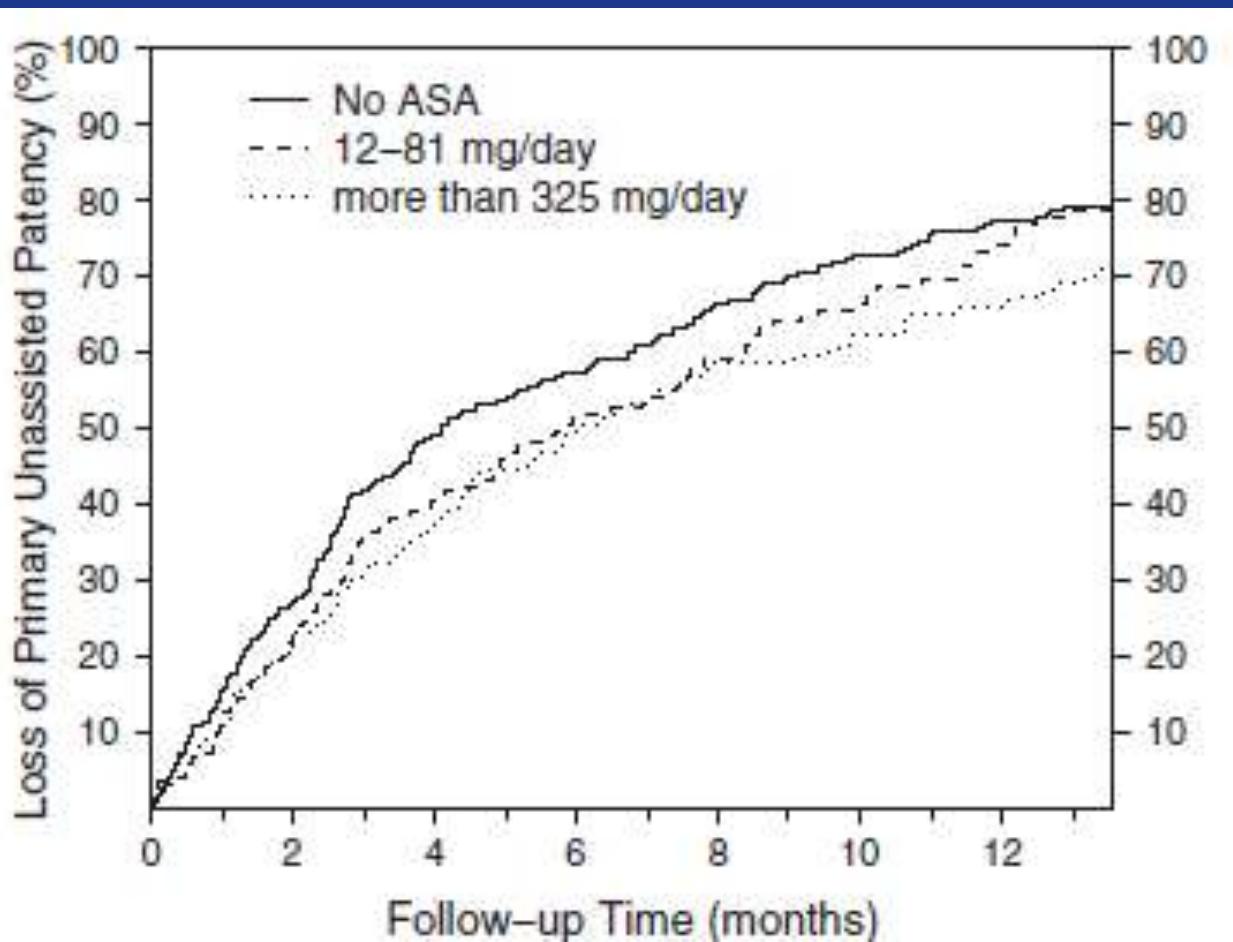
1. Timed AVF
2. Quality of AVF
3. Needling of AVF
4. Medication

Dipyridamole-Aspirin extends graft patency



Median duration of graft patency
5.8 vs 4.3 months
 $P<0.03$

Aspirin use associates with longer graft patency



This work is on the background that Aspirin/Dipyridamole prolongs graft survival

HR 0.76 (0.59-0.99)
P=0.04

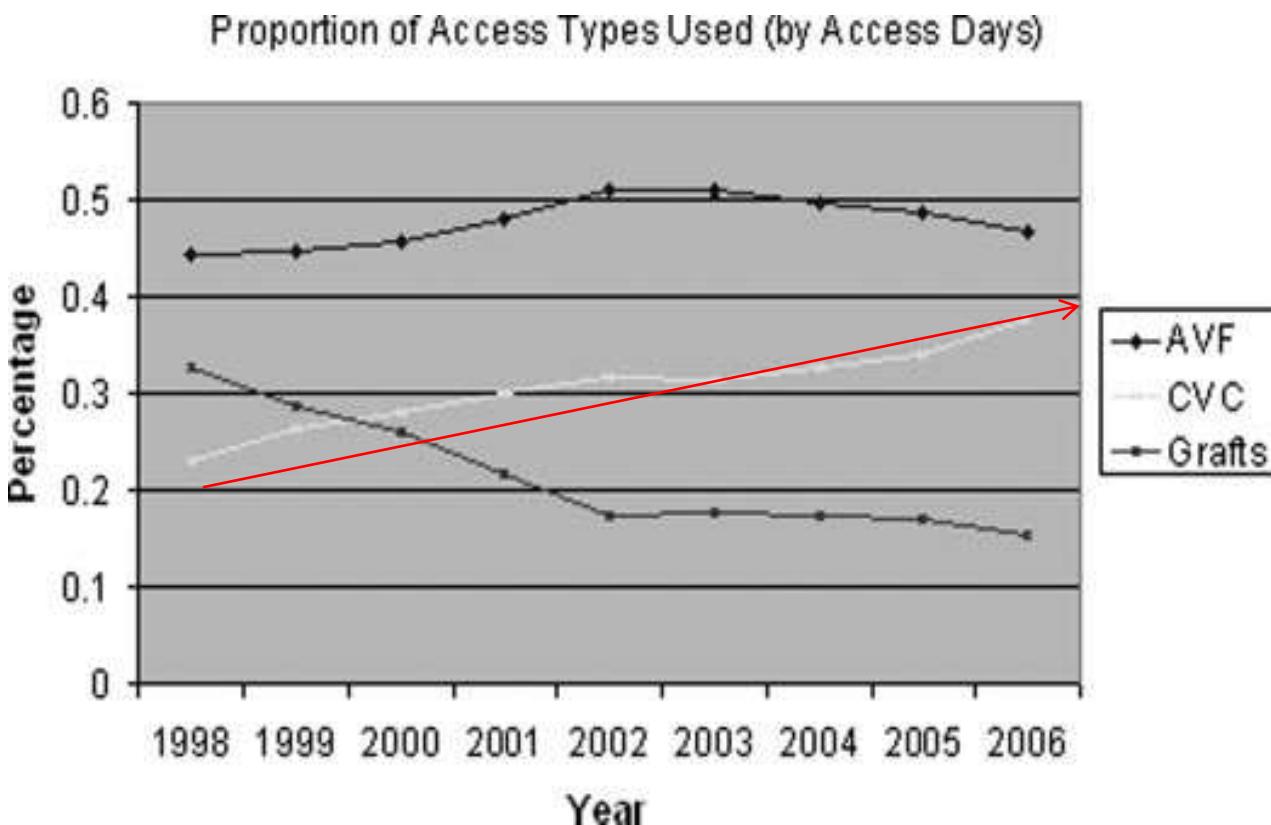


Figure 4. Trend in access use in a university-based hospital.

Approaches to prolong the use of uncuffed CVC: Results of a randomized trial.

METHODS:

- This open-label randomized study:
 - gentamicin/heparin (group A)
 - taurolidine/citrate (group B)
 - control group (heparin) (group C)

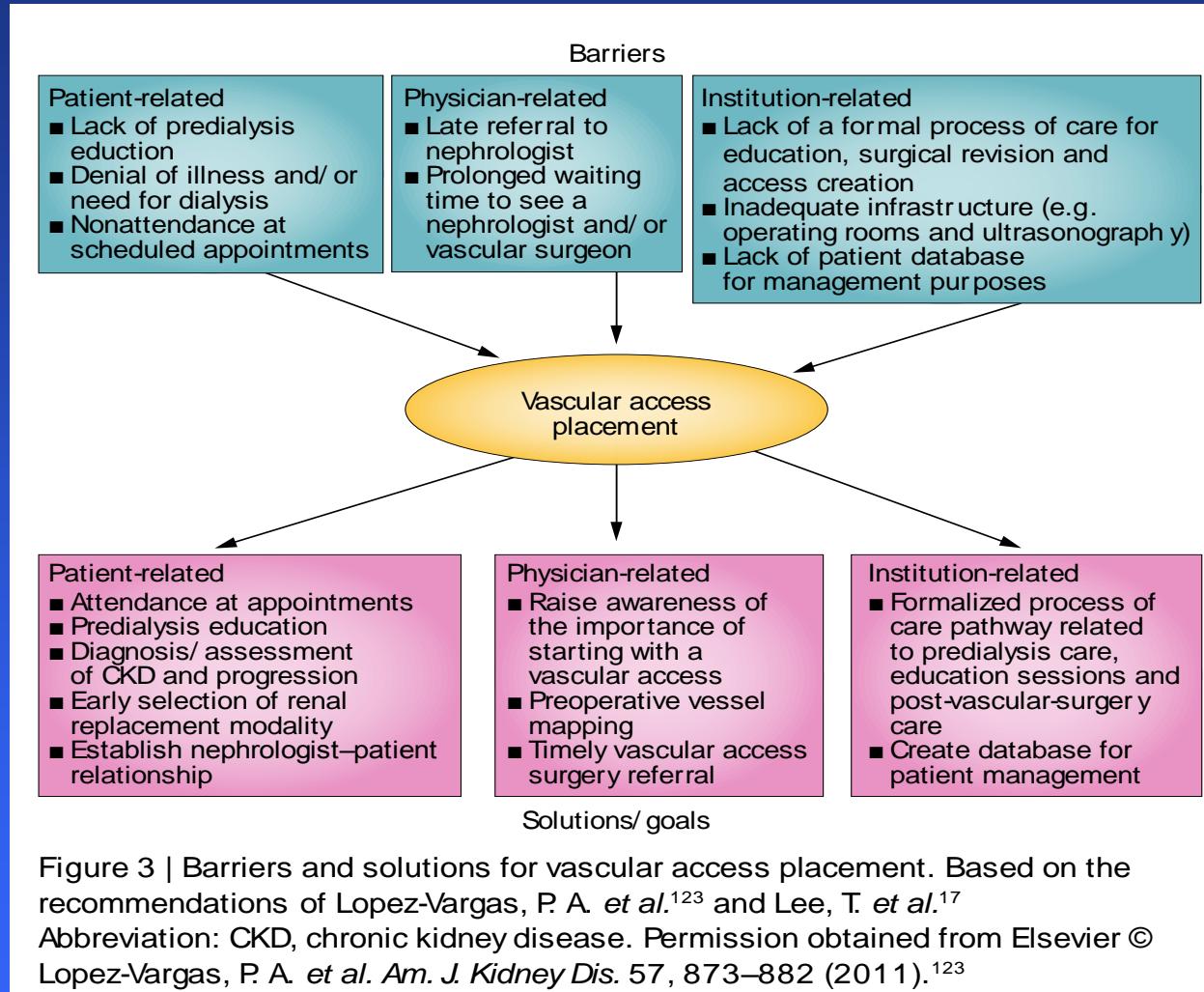
RESULTS:

1. CRB episodes developed in 6 and 8 patients in groups A and B,
2. group C (20 patients).
3. **CRB-free catheter survival at 90 days was 82% for A and 78% for B and 26% for C**

CONCLUSIONS:

Gentamicin/heparin and taurolidine/citrate, used for locking UC, were similarly effective at preventing CRB and catheter thrombosis for up to 3 months

Barriers to Optimal Vascular Access



Clinical Governance Cycle

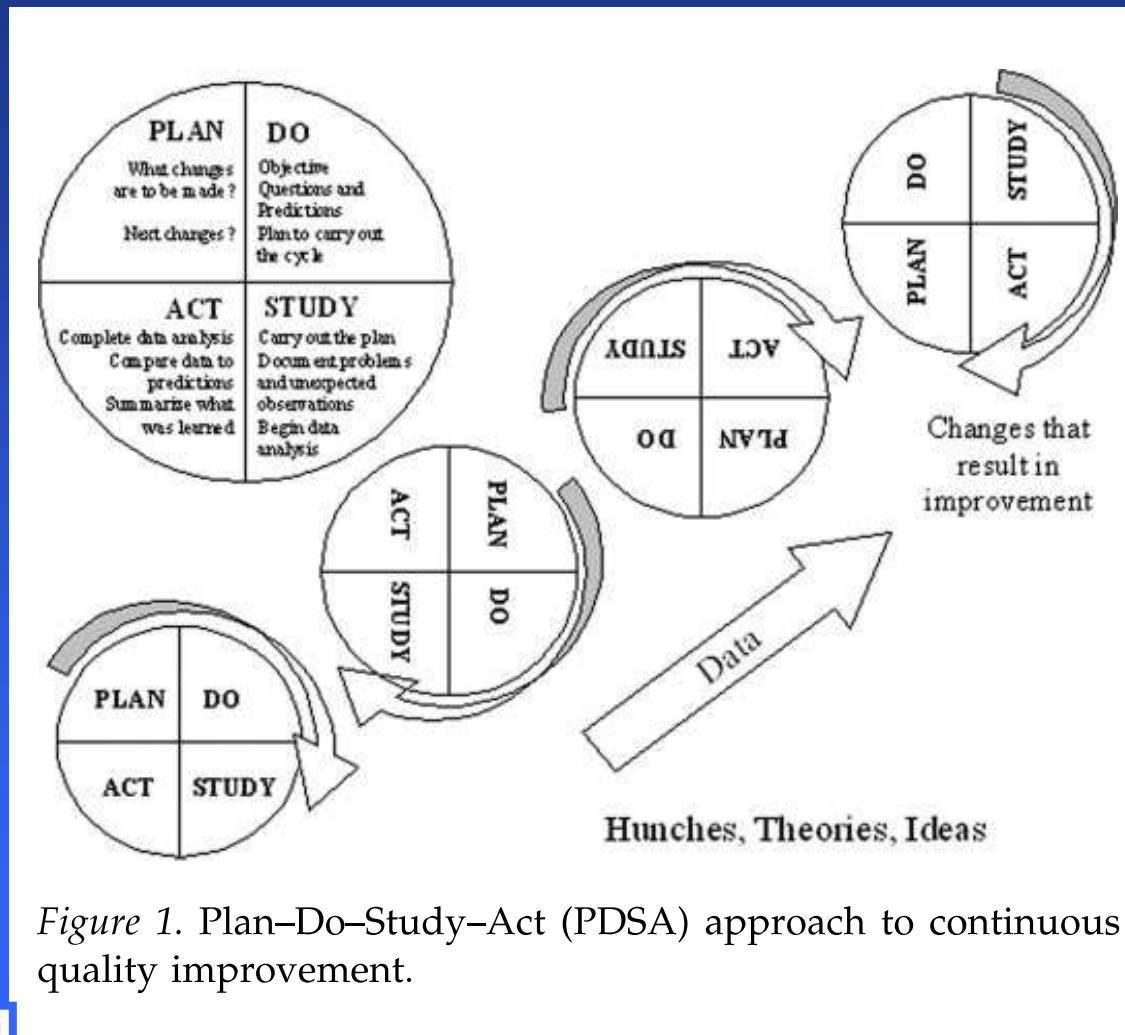


Figure 1. Plan-Do-Study-Act (PDSA) approach to continuous quality improvement.

PDSA

Plan: FFI/Safe Vascular Access

Do:

Timing AVF Insertion

Train Surgeons

Train Physicians

Study: Outcomes/Unit/National Registry

Act: Improve Service Provisions



Meeting the 2012 QIP (Quality Incentive Program) Clinical Measures: Strategies for Dialysis Centers

Further Discussion...



<http://www.gkaonlineacademy.com/forum>

